

Application No. 10/601,927  
Amendment dated May 25, 2007  
Reply to Office Action of February 27, 2007

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application.

LISTING OF CLAIMS:

1. (Previously presented) An airbag apparatus for a motorcycle for protecting a rider in the event of frontal collisions, the airbag apparatus comprising:
  - a retainer for the airbag mounted to the motorcycle;
  - an airbag for being deployed in a primarily upward, vertical direction with the inflated airbag having an uppermost end portion spaced upwardly from the retainer; and
  - an inflation control device generally aligned over and spaced upwardly from the retainer to extend thereover upon airbag inflation for restricting inflation of the airbag in a predetermined fore and aft direction that is generally aligned with rider movement due to frontal collisions and allowing inflation of the airbag in the upward vertical direction with the inflation control device sized so that size of the inflated airbag in the upward vertical direction is substantially larger than in the predetermined fore and aft direction and being connected to the airbag at at least two positions that are spaced from each other generally along the fore and aft direction and that are at an approximately equal distance from the retainer closer to the airbag upper end portion than to the retainer with the airbag deployed and inflated.
2. (Previously presented) The airbag apparatus of claim 1 wherein the inflation control device comprises a tethering device for connecting generally

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opposing portions of the airbag so as to restrict airbag inflation in the fore and aft direction generally aligned with the rider movement.

3. (Previously presented) The airbag apparatus of claim 1 wherein the inflation control device includes at least one tether that is connected to the airbag at an inflated airbag portion adjacent to the rider and which generally extends away from the rider in the fore and aft direction generally aligned with the rider movement.
4. (Cancelled)
5. (Previously presented) The airbag apparatus of claim 1 wherein the airbag has a predetermined inflated volume, and  
an inflator sized to inflate the predetermined airbag volume with the inflation control device optimizing the inflated airbag volume extending in the upward direction for maximized rider protection while keeping the size of the inflator to a minimum.
6. (Previously presented) The airbag apparatus of claim 1 wherein the airbag comprises a central panel and side panels, and the inflation control device comprises a connector attached to the central panel at one end and to either the central panel or the side panels at the opposite end thereof.

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7. (Previously amended) The airbag apparatus of claim 1 wherein the inflation control device increases rigidity of the airbag in the fore and aft direction generally aligned with the rider movement over rigidity of the airbag in the upward direction.
8. (Previously amended) The airbag apparatus of claim 1 wherein the inflation control device includes a tether in the airbag that extends generally in the fore and aft direction as the airbag is deployed.
9. (Previously presented) The airbag apparatus of claim 1 wherein the inflation control device includes a tether attached to the airbag at generally opposing forward and rearward portions therein so that upon airbag deployment and full inflation thereof a recess is formed in the airbag adjacent the rider.
10. (Previously presented) The airbag apparatus of claim 1 wherein the inflation control device includes a tether or tethers that are connected at the predetermined positions in the airbag including generally opposing forward and rearward positions.
11. (Original) The airbag apparatus of claim 10 wherein the rearward position is adjacent the rider and the forward position includes a pair of connections on either side of the airbag toward the forward side thereof.

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12. (Original) The airbag apparatus of claim 10 wherein the predetermined positions includes a generally upper position.

13. (Currently Amended) An airbag apparatus and motorcycle combination comprising:

a body of the motorcycle including front and rear wheels and a seat for a rider spaced rearward of the front wheel;

a retainer ~~having front and rear sides~~;

an airbag for being deployed from the retainer forwardly of the seat in the event of frontal collisions;

at least one direction control member arranged in the airbag to optimize airbag inflation in a predetermined, upward primary inflation direction; and

a plurality of connections between the at least one control member and the airbag that are at predetermined positions on the airbag and spaced from the retainer upon airbag inflation such that the at least one direction control member is generally aligned over and spaced upwardly from the retainer to extend thereover and the at least one control member and the connections to the airbag restrict inflation of the airbag in a controlled direction that is generally aligned with forward movement of the rider caused by frontal collisions so that size of the inflated airbag is substantially less in the controlled direction than in the upward primary inflation direction that is transverse to the controlled direction to minimize time for airbag inflation in the upward primary inflation direction ~~with the greater size of the inflated airbag in the upward direction restraining the rider during a pitching~~

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~~motion of the motorcycle where the rear wheel rises up with the motorcycle body rotating forwardly during frontal collisions, wherein the inflated airbag has a rear portion that is adjacent and facing the rider and a front portion that is spaced forwardly therefrom and facing away from the rider, and the plurality of connections include connections that are generally disposed at the front and rear portions of the airbag to restrict size of the inflated airbag therebetween, and the front and rear connections are spaced from the corresponding front and rear sides of the retainer such that the front connection and the retainer front side are spaced approximately equal to the spacing between the rear connection and the retainer rear side, and an area between the control member and the retainer is larger than an area between the control member and an end portion of the airbag distal from the retainer in the primary inflation direction.~~

14. (Cancelled)

15. (Previously presented) An airbag apparatus for a motorcycle having front and rear wheels and a seat for a rider spaced rearward of the front wheel, the airbag apparatus comprises:

a retainer;

an airbag for being deployed from the retainer forwardly of the seat in the event of frontal collisions;

at least one direction control member arranged in the airbag to optimize airbag inflation in a predetermined, primary inflation direction; and

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a plurality of connections between the at least one control member and the airbag that are at predetermined positions on the airbag and spaced from the retainer upon airbag inflation such that the at least one control member and the connections to the airbag restrict inflation of the airbag in a controlled direction that is generally aligned with forward movement of the rider caused by frontal collisions so that size of the inflated airbag is substantially less in the controlled direction than in the primary inflation direction that is transverse to the controlled direction to minimize time for airbag inflation in the primary inflation direction and maximize an area of the airbag that is generally parallel to a front side of the rider wherein the inflated airbag has a rear portion that is adjacent and facing the rider and a front portion that is spaced forwardly therefrom and facing away from the rider, and the plurality of connections include connections that are generally disposed at the front and rear portions of the airbag to restrict size of the inflated airbag therebetween, and the front and rear connections are spaced from the retainer such that an area between the control member and the retainer is larger than an area between the control member and an end portion of the airbag distal from the retainer in the primary inflation direction,

wherein the front connection comprises a pair of laterally spaced connections that generally restrict the size of the inflated airbag in a lateral direction.

16. (Previously presented) The combination of claim 13 wherein the plurality of connections includes a generally upper connection beyond which the airbag extends upon inflation.

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17. (Currently amended) The combination of claim 13 wherein the retainer has the airbag stowed therein and is positioned to allow the airbag to inflate upwardly and forwardly and rearwardly, and the predetermined positions of the connections between the at least one control member and the airbag cause the primary inflation direction to be in [a] the generally upward direction so that size of the inflated airbag is maximized in the upward direction and restricted in the controlled direction that is a forward and rearward direction.

18. (Currently amended) ~~The combination of claim 17 wherein An airbag apparatus and motorcycle combination comprising:~~

a body of the motorcycle including front and rear wheels and a seat for a rider spaced rearward of the front wheel;

a retainer having front and rear sides;

an airbag for being deployed from the retainer forwardly of the seat in the event of frontal collisions;

at least one direction control member arranged in the airbag to optimize airbag inflation in a predetermined, upward primary inflation direction; and

a plurality of connections between the at least one control member and the airbag that are at predetermined positions on the airbag and spaced from the retainer upon airbag inflation such that the at least one control member and the connections to the airbag restrict inflation of the airbag in a controlled direction that is generally aligned with forward movement of the rider caused by frontal collisions so that size of the inflated airbag is substantially less in the controlled direction than

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in the upward primary inflation direction that is transverse to the controlled direction to minimize time for airbag inflation in the upward primary inflation direction with the greater size of the inflated airbag in the upward direction restraining the rider during a pitching motion of the motorcycle where the rear wheel rises up with the motorcycle body rotating forwardly during frontal collisions,  
wherein the inflated airbag has a rear portion that is adjacent and facing the rider and a front portion that is spaced forwardly therefrom and facing away from the rider, and the plurality of connections include connections that are generally disposed at the front and rear portions of the airbag to restrict size of the inflated airbag therebetween, and the front and rear connections are spaced from the corresponding front and rear sides of the retainer such that the front connection and the retainer front side are spaced approximately equal to the spacing between the rear connection and the retainer rear side, and an area between the control member and the retainer is larger than an area between the control member and an end portion of the airbag distal from the retainer in the primary inflation direction,

wherein the retainer has the airbag stowed therein and is positioned to allow the airbag to inflate upwardly and forwardly and rearwardly, and the predetermined positions of the connections between the at least one control member and the airbag cause the primary inflation direction to be in the generally upward direction so that size of the inflated airbag is maximized in the upward direction and restricted in the controlled direction that is a forward and rearward direction, and

the predetermined positions of the connections restrict size of the inflated airbag in a lateral direction transverse to the upward direction and the forward and rearward direction.

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19. (Currently Amended) A method for manufacturing an airbag apparatus for a motorcycle, the method comprising:

providing an airbag and a retainer with the airbag being inflatable in a direction generally away from the retainer toward a distal end portion of the airbag;

connecting a first end of at least one direction control member to the airbag, the first end being spaced by a first predetermined distance from the retainer upon inflation of the airbag such that the first end is closer to the airbag distal end portion than to the retainer;

connecting a second end of the at least one direction control member to the airbag, the second end being spaced by a second predetermined distance from the retainer upon inflation of the airbag that is approximately equal to the first predetermined distance of the first end from the retainer such that the second end is closer to the airbag distal end portion than to the retainer; and

~~mounting the retainer with the airbag therein to the motorcycle so that upon airbag inflation, the inflated airbag distal end portion is positioned for restraining a rider of the motorcycle during a pitching motion thereof.~~

arranging the connected ends of the at least one direction control member so that the at least one direction control member is generally aligned over and spaced upwardly from the retainer to extend thereover in the airbag upon inflation thereof.

20. (Previously Presented) The method of claim 19 wherein the at least one direction control member is connected to the airbag by connecting generally

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opposing portions of the airbag with at least one tether so that the tether is extended with airbag inflation and the extended tether restricts inflation size of the airbag between the generally opposing portions.

21. (Previously Presented) The method of claim 19 further comprising connecting a third end of the at least one direction control member to the airbag, the third end being spaced a third distance from the retainer that is greater than the predetermined distances of the first and second ends from the retainer.
22. (Previously Presented) The method of claim 19 wherein the at least one direction control member includes a tether having opposite ends comprising the first and second ends so that connecting of the first and second ends of the at least one direction control member to the airbag includes attaching opposite ends of at least one tether to the inside of the airbag.
23. (Cancelled)
24. (Previously added) The airbag apparatus of claim 1 wherein the airbag includes only a single chamber to be inflated.